

Hunting hurricanes

Researchers use various aircraft to fly in and around hurricanes, including a WP-3D Orion propeller plane and a \$43 million Gulfstream-IV jet. This graphic shows how the WP-3D Orion studies the storms.

The plane

The WP-3D Orion

Length: 111 feet, 2 inches

Range: About 10 hours

Wing span: 99 feet, 7 inches

Low altitude: 2,560 miles (9.5 hours)

Height: 33 feet, 8 inches

High altitude: 3,797 miles (11.5 hours)

Maximum altitude: 32,000 feet

The crew

Two pilots, flight engineer, navigator, flight director (meteorologist), 2 or 3 engineering/electronic specialists, radio/avionics specialist and up to 12 scientists.

1 Flight director

Monitors all science stations during mission.

2 Navigation station

Navigator plots the aircraft's flight path.

3 Cloud physics station

Investigates all aspects of cloud systems with an emphasis on determining the physical processes leading to severe summer and winter storms.

4 Radar monitor station

Weather avoidance and Doppler radar data is examined.

5 Data station

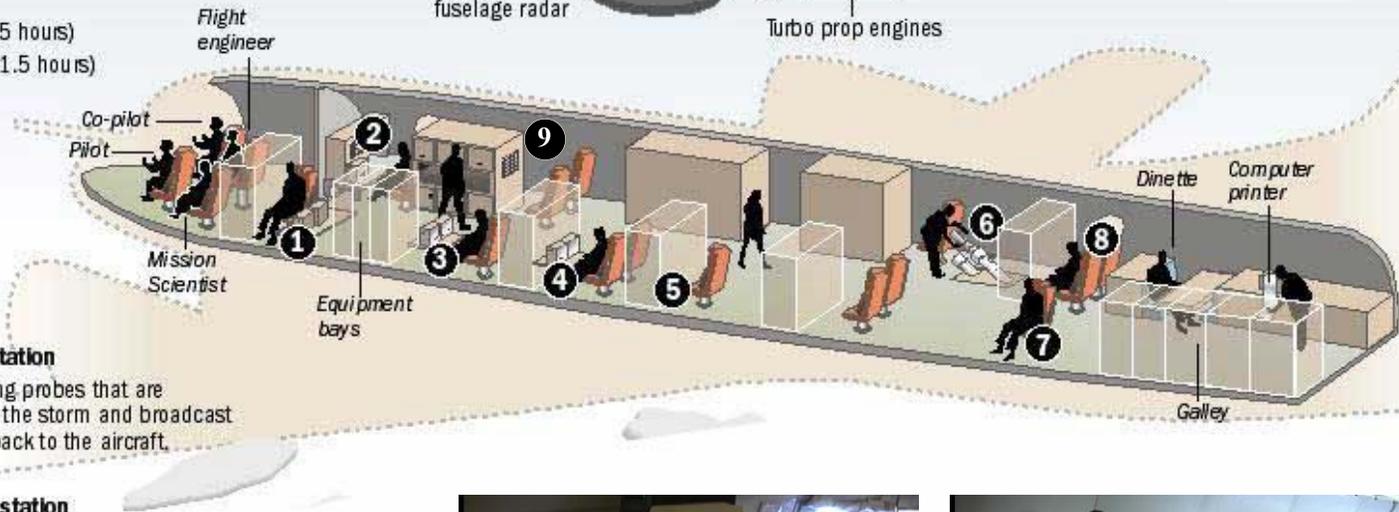
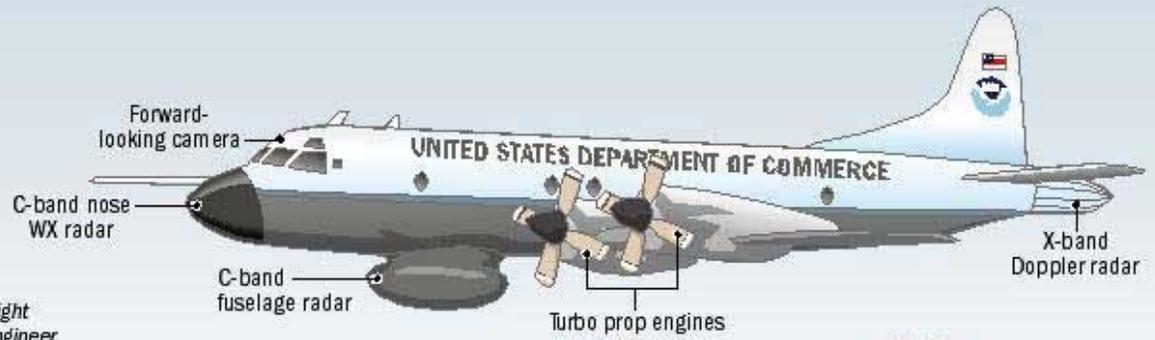
6 Dropsonde station

Data collecting probes that are dropped into the storm and broadcast information back to the aircraft.

7 Aft observer station

8 Visiting scientist station

9 Data station



P3 in flight



1



2



Pilot



4



6



9



Galley

Graphic: Copyright 2004, The Palm Beach Post

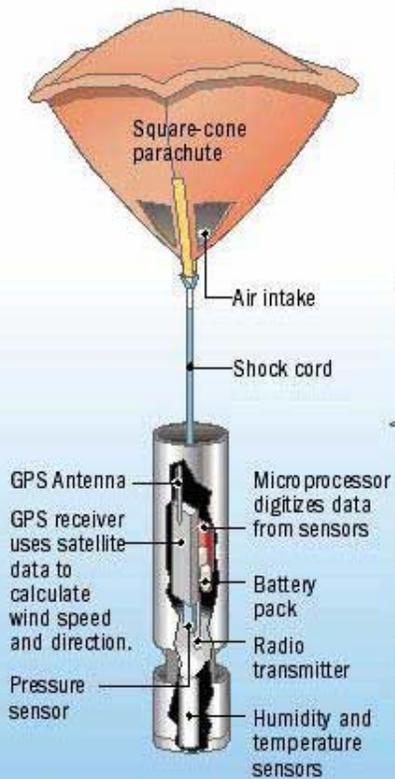
Photographs from the National Oceanic and Atmospheric Administration (NOAA) Hurricane Research Division.

The Flight of the Hurricane Hunter

The instruments

GPS Dropsonde

Measures air temperature, dewpoint, atmospheric pressure, and uses GPS positioning to detect horizontal and vertical winds. These data are measured and transmitted twice per second while the probe is in the air.



1 Through the wall: The aircraft's nose and fuselage radars measure rainfall density in the on-coming cloud wall, which indicates the intensity of turbulence. The aircraft usually enters the cloud at altitudes between 5,000 to 23,000 feet.

2 In the whirlwind: The tail Doppler radar rotates, giving scientists wind speeds within the storm from an altitude of 500 to 35,000 feet.

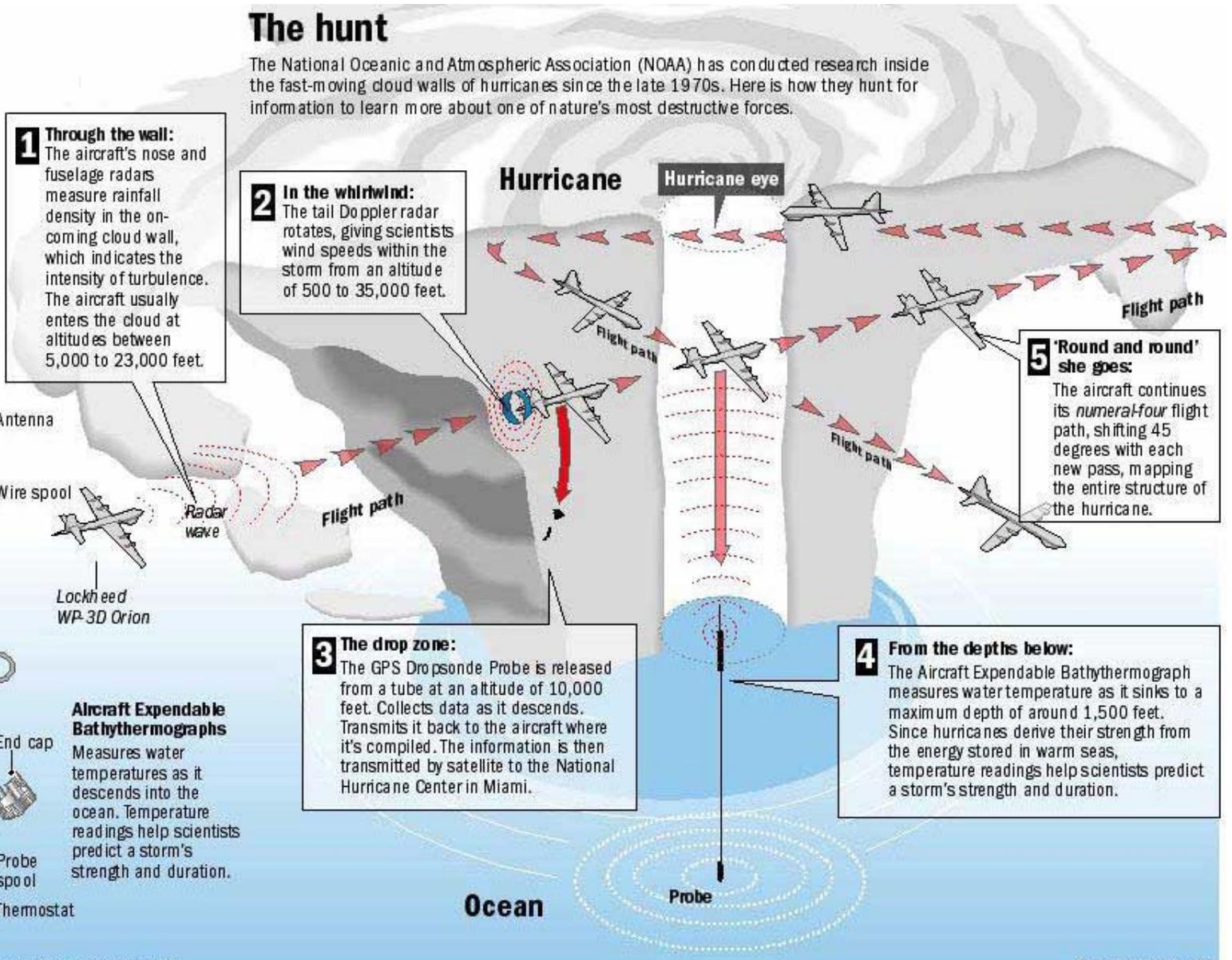
3 The drop zone: The GPS Dropsonde Probe is released from a tube at an altitude of 10,000 feet. Collects data as it descends. Transmits it back to the aircraft where it's compiled. The information is then transmitted by satellite to the National Hurricane Center in Miami.

4 From the depths below: The Aircraft Expendable Bathythermograph measures water temperature as it sinks to a maximum depth of around 1,500 feet. Since hurricanes derive their strength from the energy stored in warm seas, temperature readings help scientists predict a storm's strength and duration.

5 'Round and round' she goes: The aircraft continues its *numeral-four* flight path, shifting 45 degrees with each new pass, mapping the entire structure of the hurricane.

The hunt

The National Oceanic and Atmospheric Association (NOAA) has conducted research inside the fast-moving cloud walls of hurricanes since the late 1970s. Here is how they hunt for information to learn more about one of nature's most destructive forces.



Source: Jim McFadden, Aircraft Operations Center, National Oceanic and Atmospheric Administration; NASA

STEVE LOPEZ/Staff Artist